

a plurality of elongated leads which are electrically isolated from said die attach platform, each of said elongated leads including a circular portion formed as an attachment pad; and

[a first bus bar which is electrically isolated from said die attach platform and said plurality of elongated leads]

(b) a substrate, having first and second surfaces on opposite sides of said substrate, for providing rigid support to said lead frame, said substrate contacting said lead frame on said first surface and having vias of non-circular cross sections to allow electrical connections between said first and second surfaces.

A1
conced

6
15.

(Amended) The package of Claim [3] 1, [wherein said lead frame is substantially co-planar, having opposing first and second surfaces, and] wherein [said] an integrated circuit chip is attached on [the first surface of] said die attach platform, said package further comprising:

A2

a mask layer formed on [the] said second surface [of said lead frame], said mask layer defining a plurality of openings exposing [selected portions of said plurality of leads] said vias; and

a plurality of solder balls, each of said plurality of solder balls being electrically connected to one of said [plurality of leads] attachment pads by solder through one of said [plurality of] openings and one of said vias.

10
9.

(Amended) In an integrated circuit (IC) package [including a lead frame and] for accommodating an IC chip, wherein said IC chip includes a plurality of I/O pads for signal

A3
LAW OFFICES OF
SKJERVEN, MORRILL,
MacPHERSON, FRANKLIN
& FRIEL LLP

25 METRO DRIVE
SUITE 700
SAN JOSE, CA 95110
(408) 453-9200
FAX (408) 453-7979

13

communications and a portion of said plurality of said I/O pads require a common signal, a method [for increasing the chip pinout of said IC chip without increasing the module pinout of said IC package] comprising the steps of:

providing a lead frame having (a) [creating a bus bar in said lead frame] a die attach platform; and (b) a plurality of leads, each lead having a circular portion formed as an attachment pad;

providing a substrate having first and second surfaces on opposite sides of said substrate to provide rigid support to said lead frame, said substrate having vias of non-circular cross sections to allow electrical connections between said first and second surfaces;

attaching said lead frame to said first surface of said substrate;

attaching said IC chip to said die attach platform; [and]

electrically connecting said [portion of said plurality of] said I/O pads to said bus bar and said attachment pads;

providing a solder mask on said second surface of said substrate, said solder masks having openings corresponding to said vias; and

attaching solder balls to said solder mask and providing a flow of solder into said opening and said vias, said solder reaching said attachment pads so that an electrical connection is made between each solder ball and an I/O pad of said I/C chip.

Please add Claim 11 as follows:

2. 11. The package of Claim 1, further comprising a first bus bar which is electrically isolated from said die attach platform and said plurality of elongated leads.

LAW OFFICES OF
SKJERVEN, MORRILL,
MacPHERSON, FRANKLIN
& FRIEL LLP

25 METRO DRIVE
SUITE 700
SAN JOSE, CA 95110
(408) 453-9200
FAX (408) 453-7979